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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/079,116

02/20/2002

Quiqun Kevin Qi

RR1737/2345P

6766

7590

01/22/2004

SAWYER LAW GROUP LLP

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EXAMINER

PHAM, LY D

ART UNIT

PAPER NUMBER

2818

DATE MAILED: 01/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/079,116

Applicant(s)

QI ET AL.

Examiner

Ly D Pham

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 10-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

FINAL ACTION

DETAILED ACTION

1. Applicants' Response filed December 15, 2003 has been entered.

Response to Arguments

2. Applicant's arguments filed December 15, 2003 have been fully considered but they are not persuasive.

With respect to page 3, 2nd paragraph, applicants argue that the Mizushima fail to teach or suggest the recited MTJ coupled to the gate and source of the transistor in combination with the drain of the transistor being coupled to the output; the Office has addressed in the previous Action the fact that Mizushima has clearly shown in fig. 10 the drain of the transistor being connected to ground, together with one end of the MTJ, and the source of the transistor being connected the output of the memory cell. Although the transistor as disclosed is reversed, however, it is considered common and well known in the memory art that transistor's drain/source are used interchangeably and a circuit in which a transistor's drain/source is switched yields no difference as far as scope and designs are concerned.

With respect to item 4 being termed as "gate resistor", the Office would like to point out that 4 was labeled for the gate resistor of fig. 1. In Mizushima's circuit configuration of fig. 1, gate resistor 4 together with the MTJ 1 are used to divide the word line voltage feeding to the gate of the memory transistor, for the identical purpose as recognized by the claimed feature, in which wider margin of the signal between the different states of the output as a result would

improve the performance. Here, the drawing for the MTJ is similarly to a variable resistor. In fig. 10, Mizushima shows another variation of the same inventive concept in which the “gate resistor” is replaced by transistor 9 for even more stabilized operation from the identical concept and the MTJ is nevertheless labeled as 4 (here, 4 is likewise drawn identically to 1 in fig. 1).

From another view point, it is inherent in magnetic memory specifications that in fig. 10, 4 has to be a MTJ because if 4 was not, there is no other place in the drawing of the memory cell of fig. 10 would an MTJ be and that simply does not make sense for magnetic memory cell without an MTJ, or TMR (tunneling magneto resistor), which is essential for storing data.

With all the arguments having been addressed, set forth below is grounds of the rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 – 3 and 5 – 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizushima (JP Patent JP411204854A).

Regarding **claims 1 – 3 and 5 – 8**, Mizushima discloses a magnetic memory comprising: a magnetic tunneling junction (fig. 10, MTJ 4); and a memory cell transistor (fig. 10, transistor2) whose gate is coupled to the first end of the magnetic tunneling junction (fig. 10) and drain is coupled to the second end of the MTJ (fig. 10), wherein a second end of the MTJ and the drain of the transistor are coupled to ground.

Although Mizushima happens to be disclosing the drain of the memory cell transistor being coupled with the second end of the magnetic tunneling junction, and coupled to ground, as opposed to the transistor's source as presently claimed, nevertheless, it is considered common and well known, especially in the memory arts, that the transistor's drain and source can be used interchangeably. Therefore, it is considered obvious to one of ordinary skill in the art, at the time the invention was made, to realize the memory cells apparatus as claimed as a circuit variation within the bounds and scope from the disclosure of Mizushima since the operation of the memory cell system as shown does not alter the inventive concept as claimed and more importantly, remains well within the inventive concept (increasing the margin of the output difference between the memory cell's high and low states). In fig. 12, Mizushima also shows load resistor 3, bitline (BL) and word line (WL) for memory cell connection in an array, in which row lines and column lines are all considered prior arts.

Regarding **claims 4 and 9**, the examiner takes an Official Notice of the claimed limitation, in which the memory cell transistor operates in saturation region, to be common and well known in the art.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

6. Any inquiry concerning this communication on earlier communications from the examiner should be directed to Ly Pham, whose telephone number is **(571) 272-1793**. The examiner can normally be reached on Monday – Friday from 8:30am to 5:00pm, alternate Friday off. The examiner's supervisor, David Nelms, can be reached at **(571) 272-1787**. The fax number for the organization where this application or proceeding is assigned is 703-308-7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Ly Pham



January 15, 2004



David Nelms
Supervisory Patent Examiner
Technology Center 2800